WHAT IS CLAIMED IS:

1.   A method for alignment in forming a new layer on a substrate by measuring each position information of existing layers formed prior to said new layer and said new layer in a first measurement condition or a second measurement condition, comprising the steps of:

measuring marks formed in each of said existing layers by switching said first and second measurement conditions; and

aligning said existing layers and said new layer based on measurement of mark position of said existing layers.

2.   The alignment method according to claim 1, wherein said second measurement condition has a plurality of measurement conditions different from each other in an optical characteristic, and the measurement is performed by switching the plurality of measurement conditions.

3.   The alignment method according to claim 2, wherein as said optical characteristic wavelengths of illumination light for the measurement are switched.

4.   The alignment method according to claim 2, wherein as said optical characteristic values representing light intensity distribution condition of illumination light for measurement are switched.

5. An exposure apparatus, wherein in forming a new layer on a substrate, said new layer is formed by measuring each position information of existing layers formed prior to said new layer and said new layer in a first measurement condition or a second measurement condition, as well as measuring marks formed in each of said existing layers by switching said first and second measurement conditions, and aligning said existing layers and said new layer based on measurement of mark position of each of said existing layers.

6. An exposure apparatus, wherein an exposed object is positioned based on measurement of position information for marks formed in each of a plurality of existing layers on the exposed object on which the plurality of existing layers are disposed, and a new layer is to be formed, and then projection exposure is performed, said apparatus comprising a first measurement part and a second measurement part for measuring the position information for the marks, the first and second measurement parts being adapted such that they can be switched for marks formed in each of said existing layers.

7. The exposure apparatus according to claim 6, wherein said first and second measurement parts are switched manually.

8.   The exposure apparatus according to claim 6, wherein the switching of said first and second measurement parts is performed based on automatic calculation of contrast

5   executed prior to the exposure.

9.   The exposure apparatus according to claim 6, wherein the switching of said first and second measurement parts is performed based on the measurement condition

10   determined by the calculation result of contrast of the marks formed in each of the existing layers, and said measurement condition is stored.

10.   A method for projection exposure by positioning an

15   exposed object comprising a plurality of existing layers each having alignment marks formed therein, based on measurement of the alignment marks,

wherein in measuring the alignment marks in each of said layers, each alignment mark is measured by switching

20   conditions of illumination light for the measurement depending on the alignment marks in each layer.

11.   A semiconductor device manufacturing method comprising steps of:

25   installing in a semiconductor manufacturing factory a group of manufacturing apparatuses for various processes including an exposure apparatus wherein in

forming a new layer on a substrate, said new layer is
formed by measuring each position information of existing
layers formed prior to said new layer and said new layer
in a first measurement condition or a second measurement
5   condition, as well as measuring marks formed in each of
said existing layers by switching said first and second
measurement conditions, and aligning said existing layers
and said new layer based on measurement of mark position
of each of said existing layers; and
10   manufacturing semiconductor devices with a plurality
of processes by using the manufacturing apparatuses.

12. The semiconductor device manufacturing method
according to claim 11, further comprising the steps of:
15   connecting said group of manufacturing apparatuses
to each other via a local area network; and
        data-communicating information about at least said
exposure apparatus of said group of manufacturing
apparatuses between said local area network and an
20   external network outside said semiconductor manufacturing
factory.

13. The semiconductor device manufacturing method
according to claim 12, wherein maintenance information
25   about said exposure apparatus is obtained by accessing
and communicating data with a database provided by a
vender or user of said exposure apparatus via said

external network, or production control is conducted by communicating data via said external network with another semiconductor manufacturing factory other than said semiconductor manufacturing factory.

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14. A semiconductor manufacturing factory comprising:

a group of manufacturing apparatuses for various processes including an exposure apparatus wherein in forming a new layer on a substrate, said new layer is

10   formed by measuring each position information of existing layers formed prior to said new layer and said new layer in a first measurement condition or a second measurement condition, as well as measuring marks formed in each of said existing layers by switching said first and second

15   measurement conditions, and aligning said existing layers and said new layer based on measurement of mark position of each of said existing layers;

a local area network for connecting the manufacturing apparatuses to each other; and

20   a gateway allowing access by the local area network to an external network outside the factory,

thereby allowing data-communication of information about at least one of said manufacturing apparatuses.

25   15. A maintenance method for an exposure apparatus installed in a semiconductor factory, wherein in forming a new layer on a substrate, said new layer is formed by

measuring each position information of existing layers

formed prior to said new layer and said new layer in a

first measurement condition or a second measurement

condition, as well as measuring marks formed in each of

5   said existing layers by switching said first and second

measurement conditions, and aligning said existing layers

and said new layer based on measurement of mark position

of each of said existing layers, the maintenance method

comprising the steps of:

10   a vender or user of said exposure apparatus

providing a maintenance database connected to an external

network of the semiconductor manufacturing factory;

allowing access to said maintenance database from

inside of said semiconductor manufacturing factory via

15   said external network; and

transmitting maintenance information stored in said

maintenance database via said external network to the

semiconductor manufacturing factory side.

20   16.   An exposure apparatus further comprising a network

interface and a computer for executing network software,

thereby allowing maintenance information for an exposure

apparatus to be data-communicated via a computer network.

25   17.   The exposure apparatus according to claim 16,

wherein said network software provides on said display a

user interface for accessing a maintenance database

connected to an external network of a factory with said

exposure apparatus installed therein and provided by a

vender or user of said exposure apparatus, thereby

allowing acquisition of information from the database via

5   said external network.